

the female smooth internally and externally, with a row of fine teeth on its superior surface; hand compressed and carinated externally; arm, wrist and hand in the male all much dilated; the first with three or four small teeth on its superior margin; the last not carinated externally; fingers in both sexes compressed, curved inwards, furrowed externally, finely denticulated on their inner borders, which meet throughout their entire extent. Second pair of legs equalling in length eight times the breadth of the carapace.

All the male specimens I have obtained are smaller than the female, and have the carapace less convex and almost smooth.

Locality, Port Jackson, at depths of about five to eight fathoms.

2.—*STENONRHYNCHUS FISSIFRONS*, *sp. nov.*

Carapace having a blunt spine and two tubercles on the gastric region, placed in the form of a triangle, with the base forwards, and the apex formed by the spine; one prominent blunt spine on the cardiac region, and three tubercles on each branchial region; a blunt, sub-bifid spine on the lateral border of the carapace, and two small acute teeth situated below and behind it. Rostrum as in preceding species, but the furrow separating the two halves extending as far back as the line joining the posterior borders of the orbits; superior border of the orbit armed with a prominent acute spine. Eyes, antennæ, and maxillipedes as in preceding species. Anterior limbs (in the female) much compressed; arm with three small acute teeth on its outer surface; wrist with two tubercles on its outer surface and two small teeth on its inferior border; hand with a row of short acute spines on its superior and inferior borders; its inner surface smooth; the middle of its outer surface obscurely tuberculated.

The above description is from a single specimen—a female—in Mr. Macleay's collection, from Auckland, New Zealand.

Notes on the ANATOMY OF BIRDS. 1.—The Brachial Plexus of Birds. By WILLIAM A. HASWELL, M.A., B. Sc.

The anatomy of the Brachial Plexus of Nerves in the Class Aves has been described by various authors (e. g., Cuvier,

Leçons d'Anatomie Comparée, tom. 2, p. 266; the author of the article "Birds" in *Rees' Cyclopædia*; Owen in the article "Aves" in *Todd's Cyclopædia*, and in his *Anatomy and Physiology of the Vertebrata*, Vol. II, p. 125), but in all cases somewhat briefly and unsatisfactorily, and with not a few omissions of important points.

The Brachial Plexus consists in Aves of the whole of, or of branches from, the anterior primary divisions of from three (*Todirhamphus sanctus*, *Myzantha garrula*), to five (*Phalacrocorax Novæ-Hollandæ*, *Grallina picata*) spinal nerves, four being the commonest number. The most general arrangement of the plexus and its branches is as follows:—

The first nerve before joining with any of the others detaches a considerable branch, which subdivides for the supply of the rhomboid and trapezius muscles. The second nerve also gives off a branch before joining the plexus; this is a slender twig which runs directly backwards over the posterior nerves of the plexus to supply the serrati muscles; it is thus analogous to the "nerve of Bell" of human anatomy. The second nerve of the plexus divides into two; the anterior of the two divisions is joined by the first nerve to form the *posterior brachial nerve* (*circumflex* and *musculo-spiral*); the posterior division joins with the remaining two or three nerves to form the *anterior brachial nerve* (*ulnar*, *median*, and *musculo-cutaneous*). There are thus formed two main nervous trunks, which, while in the neighbourhood of the axilla, give off a number of muscular branches. The *posterior brachial nerve* gives branches to the subclavius, ⁽¹⁾ coraco-brachialis brevis, ⁽²⁾ and subscapularis, ⁽³⁾ to the teres major, ⁽⁴⁾ and latissimus dorsi. The *anterior brachial nerve* gives origin to two large branches for the pectoralis major, one for the coraco-brachialis longus, ⁽⁵⁾ and to a small branch, which sometimes originates from one of the branches to the pec-

(1) *Subclavius* of Rolleston; *pectoralis secundus* of authors. The nerve for this muscle sometimes arises from the first nerve of the plexus directly.

(2) *Deltoides minor* of Tiedemann.

(3) *Levator humeri* of Tiedemann.

(4) *Infraspinatus* of Meckel,

(5) *Pectoralis minimus* of Tiedemann; *subclavius* of Retzius.

toralis, destined for the deltoideus minor. The *internal cutaneous nerve* also arises in part from this cord, but its mode of origin presents considerable varieties in different birds. It arises almost always by two roots, which may be both derived from the anterior brachial nerve, or one from the anterior brachial nerve, and the other directly from the spinal nerve following the last of those entering into the formation of the plexus. When the former is the arrangement observed, the anterior brachial nerve is usually joined near its origin by a branch of very small size from the spinal nerve immediately following those which go to make up the great bulk of its fibres, and the spinal nerve from which this slender branch is derived is evidently the equivalent of that from which arises the posterior root of the internal cutaneous, when the last described arrangement holds good; since in this case the anterior brachial nerve is not joined by any such small accessory root. The spinal nerve which thus so generally assists either directly or indirectly in the formation of the internal cutaneous, seems to be the analogue of the third dorsal nerve of mammals; and this view is strengthened by the fact that in cases in which it gives off no branch to contribute to the formation of the internal cutaneous, it gives off an intercosto-humeral branch for the nerve-supply of the skin of the upper arm. The two roots of the internal cutaneous nerve join one another about the middle of the upper arm, and the single nerve thus formed courses to the ventral surface of the fore-arm, where it divides into two main branches, which are traceable, giving off numerous branchlets, in the subcutaneous tissue as far as the wrist.

The above may be regarded as the simplest arrangement of the plexus. In many cases, however,—*e.g.*, *Columba ænas*, *Leucosarcia picata*, *Phalacrocorax Novæ-Hollandiæ*—the connexions of the nerves are more complex.

As regards the distribution of the main trunks, the *posterior brachial nerve* passes from the axilla to the posterior surface of the arm, where it gives off near the head of the humerus a large *circumflex* branch, which divides for the supply of the deltoideus major, the tensor major and the humero-scapular joint. The main part of the nerve, after giving off branches to the triceps, and,

further down the arm, a strong cutaneous branch (*external cutaneous of musculo-spiral*) for the supply of the anterior alar fold, reaches the forearm and gives a muscular branch to the extensor carpi radialis longior and extensor metacarpi radialis.* It then divides into three branches; of these that situated nearest the radial side courses to the hand in contact with the extensor longus pollicis and extensor indicis, gives off a branch to the interossei muscles, one to the extensor brevis pollicis and one to the adductor manus, and ends in cutaneous nerves for the supply of the dorsal surface of the three digits. The middle division gives a twig to the anconeus, and ends in two branches, one of which supplies the extensor communis digitorum, and the other goes to supply the skin on the ulnar side of the manus; the last, or most ulnar, of the three divisions divides into two branches—one supplying the extensor carpi ulnaris, and the other the skin on the ulnar border of the forearm.

The *anterior brachial nerve*, after giving a branch to the biceps, and a cutaneous twig to the skin covering the upper part of the arm, runs down the inner surface of the arm to the hollow in front of the elbow-joint, near which it gives off a cutaneous nerve (*external cutaneous of musculo-cutaneous*) to the skin of the radial side of the forearm, and a muscular branch to the brachialis anticus muscle; it then divides into two trunks. The first of these, passing to the radial border of the forearm, gives off two small cutaneous twigs, and a branch which supplies the flexor muscle carpi ulnaris, and divides into two branches, one of which runs along the ulnar border of the flexor carpi ulnaris to the hand, where it supplies the adductor manus and becomes cutaneous on the third digit; while the other passes under the flexor carpi ulnaris to the deep surface of the flexor sublimis digitorum, the tendon of which it accompanies to the hand, where it ends in two small superficial branches.

The second of the two main trunks of the *anterior brachial (median)* divides into three branches; one of these supplies the pronator muscles; another passes under the pronators and supplies the flexor profundus digitorum; while the third and

* *Extensor metacarpi longus*, of Tiedemann; *abductor pollicis longus*, of Rüdinger.

largest runs to the hand, where it divides into two branches, of which one supplies the flexor brevis pollicis and adductor pollicis, and becomes cutaneous on the pollex; while the other supplies the flexor brevis indicis (fourth interosseus) muscle, and becomes cutaneous on the second digit.

EXHIBITS.

Mr. Masters exhibited a *Phyllosoma* (new species) from Port Jackson; and a number of the young of *Trachurus trachurus*, which had been found sheltered under a medusa.

Dr. Cox exhibited a complex piece of Wood Carving from the Solomon Islands, which appeared to represent a grotesque combination of various forms.

NOTICES.

The President announced that the Annual Meeting would be held on Wednesday, January 22nd, in accordance with arrangements made by the Council of the Society.

Mr. Macleay stated that it had been suggested that the Monthly Meetings of the Society should be, in future, held on the last Wednesday night in each month, instead of the Monday night, as at present. The matter would be arranged at the next Council Meeting.
